

What is claimed is:

1. A method of processing an optical signal in an optical communications network,  
5 said method comprising the steps of:  
  
inputting said optical signal to an input of a modulator; and  
  
overdriving said modulator with a modulation voltage signal value to  
10 produce a modulated optical signal having an extinction ratio reduced from  
maximum, wherein said modulated optical signal having a reduced extinction  
ratio as measured before propagation over the optical communications network  
yields a bit error rate improvement at a receiver of said modulated optical signal  
after propagation over the network  
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2. The method of claim 1 further comprising the step of, transmitting said  
modulated optical signal across an optical medium to a receiver, wherein said receiver  
receives said modulated optical signal having an eye with a compressed central portion.  
20 3. The method of claim 1, wherein said modulator comprises a Mach-Zehnder  
Modulator (MZM).  
4. The method of claim 1, wherein said optical communication network transmits  
said modulated optical signal at about an OC-192 rate, whereby the use of forward error  
25 correction may increase the data rate from its standard OC-192 value of 9.95328 Gbps  
by up to approximately 25%.  
5. The method of claim 1, wherein said optical communications network transmits  
said modulated optical signal at about an OC-48 rate, whereby the use of forward error  
30 correction may increase the data rate from its standard OC-48 value of 2.488 Gbps by up  
to approximately 25%.

6. ✓ The method of claim 1, wherein said optical communications network transmits said modulated optical signal at about an OC-768 rate, whereby the use of forward error correction may increase the data rate from its standard OC-768 value of 39.81 Gbps by up to approximately 25%.

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7. The method of claim 2, wherein said optical medium comprises a single mode optical fiber.

10 ✓ 8. A method for improving a bit error rate of an optical signal transmitted over an optical transmission medium said method comprising the steps of:

providing a stabilized light beam to an optical modulator;

15 asserting at said optical modulator a modulation drive signal having a peak-to-peak voltage value; and

20 improving said bit error rate of said optical signal transmitted across said optical transmission medium by increasing said peak-to-peak voltage value of said modulation drive signal to overdrive said optical modulator to cause said optical signal to have a reduced extinction ratio as measured before propagation over an optical transmission medium at a receiver coupled to the end of said optical transmission medium.

25 ✓ 9. The method of claim 8, wherein a laser diode provides said stabilized light beam.

✓ 10. The method of claim 8, wherein said optical modulator comprises a semiconductor Mach-Zehnder modulator (MZM).

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11. The method of claim 8, wherein said optical conductor comprises a single mode optical fiber.

12. The method of claim 8, wherein said optical modulator comprises a lithium niobate Mach-Zehnder modulator (MZM).

13. The method of claim 8, wherein said optical modulator comprises a polymer-based Mach-Zehnder modulator (MZM).  
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14. The method of claim 8, wherein said optical modulator supports a modulation rate at about OC-192, whereby the use of forward error correction may increase the data rate from its standard OC-192 value of 9.95328 Gbps by up to approximately 25%.

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15. The method of claim 8, wherein said optical modulator supports a modulation rate at about OC-48, whereby the use of forward error correction may increase the data rate from its standard OC-48 value of 2.488 Gbps by up to approximately 25%.

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16. The method of claim 8, wherein said optical modulator supports a modulation rate at about OC-768, whereby the use of forward error correction may increase the data rate from its standard OC-768 value of 39.81 Gbps by up to approximately 25%.

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17. A method for modulating an optical carrier wherein said method yields an improved bit error rate for said modulated optical carrier said method comprising the steps of:

asserting said optical carrier at an optical input of an optical modulator; and

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overdriving said optical modulator with a modulation voltage signal to produce said modulated optical carrier, whereby said overdriving of said optical modulator causes said modulated optical carrier to have a less than maximum extinction ratio to improve said bit error rate of said modulated optical carrier as received by a receiver of said optical carrier.

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18. The method of claim 17, wherein said optical modulator is a semiconductor Mach-Zehnder modulator (MZM).

19. The method of claim 17, wherein said optical modulator is a lithium niobate Mach-Zehnder modulator (MZM).

20. The method of claim 17, wherein said optical modulator is a polymer-based  
5 Mach-Zehnder modulator (MZM).

21. An apparatus for modulating an optical carrier, said apparatus comprising of:  
an optical modulator; and

10 a drive voltage controller to control a modulator voltage value supplied to  
said optical modulator to cause said optical modulator to produce a modulated  
optical carrier having an extinction ratio reduced from a maximum as measured  
before propagation over a single mode fiber wherein said modulation voltage  
value supplied to said optical modulator exceeds a voltage value necessary to  
15 produce said maximum extinction ratio.

22. The apparatus of claim 21 wherein said optical modulator is a Mach-Zehnder  
modulator (MZM).

20 23. The apparatus of claim 22 wherein said MZM comprises one of a semiconductor  
MZM, a lithium niobate MZM and a polymer-based MZM.

24. The apparatus of claim 21 wherein said extinction ratio reduced from said  
maximum produces an improved bit error rate as measured at a receiver of said  
25 modulated optical carrier after propagation over fiber.